Speaker bio: Dr. Gordon Jones

Gordon F. Jones grew up on a small swine and tobacco farm in Tennessee where he was active in both 4-H and FFA activities. As a high school senior, he won the award as the FFA Star Farmer in Tennessee. Dr. Jones received a BS degree in Animal Husbandry from the University of Tennessee in 1966 and a PhD degree in Animal Science in 1970. He joined the faculty at Western Kentucky University (WKU) in the fall of 1970. He taught various animal science classes during his 40-year tenure at WKU and served as faculty advisor for approximately 100 undergraduate animal science and pre-vet students each year. In addition, he coached the livestock judging and meat animal evaluation teams and served as faculty advisor to the WKU Block and Bridle Club since the club was chartered in 1977. Under Dr. Jones's leadership, the WKU Block and Bridle chapter was recognized nationally with three National Outstanding Junior and two Outstanding Senior awards. In addition, the chapter placed first in chapter activities three times and twice won the scrapbook competition. He also served as the major professor for 31 graduate students.

Dr. Jones has been actively involved in the beef cattle and swine industries on local, state and national levels. He has given lectures and seminars on swine breeding and management in more than 20 countries. Dr. Jones won the College Teaching Award and both the College and University wide awards for Faculty Advising. Dr. Jones spent the winter and spring Quarters of 1979 on a Sabbatical study at Iowa State University. Another sabbatical was taken in 1998 to evaluate animal science curricula at the University of Georgia, Middle Tennessee State University, Michigan State University, Iowa State University and Cal Poly, San Luis Obispo. Dr. Jones considers his major professional accomplishment to be the success of the students he has taught and advised, and he continues to communicate with many of them on a regular basis.

Dr. Jones retired from WKU in 2010 but remained on the faculty for 2 years in the transitional retirement program. He is presently involved with his family in the Red Hill Farms beef cattle and swine operations. Red Hill is a beef cattle seedstock operation consisting of 450 mature cows. The herd is composed of Red Angus, Simmental and SimAngus, and a small number of Angus and Charolais cows. In each of the last 3 years, bulls have sold into 15 or more states and Canada. In 2017, Red Hill Farms won the award as the Breeder of the Year for the Red Angus breed.

Dr. Jones is presently serving a 3-year term as an At Large Director of the Beef Improvement Federation. He has previously served on the Red Angus Association Breed Improvement Committee, and he is presently serving on the Technical Committee. Dr. Jones is a member of the Beef Efficiency Conference Committee of the Kentucky Cattleman's Association (KCA) and actively involved in planning and conducting the annual efficiency conference held on the first day of the KCA convention each year. He is also a member of the Kentucky Agricultural Development Board. Dr. Jones has been married to Susan for 49 years and they have two adult children, and three grandsons.

Selecting Cattle for Optimal Production in Pasture Settings

Gordon F. Jones
Red Hill Farms

Introductions

Cattle are ruminants and capable of utilizing various forages to support body maintenance and production. However, the major question that needs to be answered "is it possible to select animals that allow for optimal production per acre of land without supplying purchased feedstuffs to supplement the pasture that is provided?" As I have pondered over this issue for many years, it has become quite clear that "environmental and forage adaptability trumps every other criterion that may be used in selection". This does NOT mean that quantitative genetic values are not available to aid in the selection process, but it is necessary to make a concerted effort to ensure animals are selected for adaptability before considering any other factors. A major problem for the fescue belt is that most semen that is marketed is from bulls that were grown and developed in other regions of the US. This problem results in progeny that are marginally adaptable at best. Consequently, the paradigm for selecting bulls and purchasing semen should be based much more on adaptability than on the genetic values (EPDs and Index values) of the bulls. Once again, this does NOT mean that EPDs and economic Index values should not be considered.

The most important goals for beef cow/calf operations are for cows to wean a calf each year and to do that for many years., preferably 10 or more. It is idea if this can be accomplished with an annual breeding season of 60 days or fewer. Of course, it is desirable if this goal can be accomplished with the least stress and management possible. Cows that have excellent dispositions and are easy to handle make cattle farming a pleasure and generally contribute to superior calf performance and carcass characteristics. Also, soundness of feet and legs and udders are extremely important in relation to longevity of production. Producing calves that are acceptable or superior for growth, efficiency and carcass characteristics after they leave the farm should also be the goal of every producer.

Frame Size and Mature Weight

There is a high genetic correlation between frame size and mature weight. For many years in the beef industry (from the early 70's to the 90's), the primary focus of many seedstock producers was single trait selection for frame size. Since frame size is highly heritable, purebred cattle in most breeds became very large. The result of this selection was poor quality carcasses and many cows that were unable to reproduce with available pasture and forage programs.

However, scientific based performance and selection programs were implemented in the late 1990's to rapidly change cattle to become better grazing animals, more efficient in the feedlots, and produce higher quality carcasses. Much of the selection efforts of breeders were related to growth rate, and there is a positive correlation between growth rate and mature size. In addition, because the efficiency of slaughtering and processing improves with increased carcass weights, packers have continually increased the maximum carcass weight that can be attained before a reduction in price.

These occurrences have resulted in cows that are generally much larger than 25 years ago. So, the question is "can farmers or ranchers be more profitable with larger or smaller cows?" Two researchers, Dr. Kris Ringwall at North Dakota State University and Dr. David Lalman at Oklahoma State University, have both devoted much of their research career to answering this question. Dr. Lalman says matching cows to their environment is extremely important with relation to profitability. When cows have greater nutrient requirements than can be supplied by a farm or ranch forage program, then the only solution is to purchase supplemental feedstuffs to prevent reproductive problems. Dr. Ringwall has done extensive work comparing 1100-pound and 1400-pound cows managed in the same environment. His research results show 20 to 30 % more pounds of calf per acre from the 1100-pound cows. These results are from running 130 of the smaller cows compared to 100 of the larger cows. Dr. Jason Rowntree at Michigan State University has been charged with improving grazing efficiency on two experiment stations in the Northern Peninsula of Michigan. When he began, the average mature cow weight was 1500 pounds. Now the mature cows average 1200 to 1250 pounds. Between 2009 when he began with those large cows and 2015 when the cows had become much smaller, the cow days per acre were increased from 74 to 110. Of course, part of this change was also due to improved grazing management. Another conclusion by Dr. Rowntree was that smaller cows convert low-quality forages more efficiently than larger cows. He has concluded that the "sweet spot" for cow weight in his climate is around 1200 pounds. That would probably be comparable to 1100-pound cows in KY.

Milk Production

Since the introduction of EPDs for milk production in the various breeds, there has been remarkable increases in milk production in most major breeds. The emphasis on increasing milk production took on new meaning when the percentile ranks for bulls began to be published along with the EPDs. Most breeders began to promote bulls that were better than average, and likewise, most commercial producers began to demand bulls that were better than average. Little thought was given to the extra nutrients and the cost of those nutrients required for greater milk production. The result has been that heavy milking cows on limited or low-quality feedstuffs often fail to cycle and rebreed in a defined calving season. Not only do heavier milking cows require more and better nutrition during lactation, but those cows with increased genetic potential for milk production also require a higher level of nutrition during the dry period. Jenkins and co-workers at the USDA Meat Animal Research Center found that heavier milking cows had heavier visceral weight than cows with lower milk production potential and thus required a higher level of nutrition to accommodate those larger organs.

How much milk is needed? It is important that cows produce an ample amount of colostrum for the newborn calf, and it is further important that the calf receive adequate nutrition from milk until the rumen becomes developed and the calf becomes capable of consuming enough roughage to receive a high proportion of necessary nutrients from grazed forage. Beyond that, extra milk production is probably a liability rather than an asset. For lactating cows to thrive and do well in a forage environment, particularly an environment with limited or low-quality forages, average or below average milk production levels are probably desirable.

Conformation or Body Shape
Forage efficient cattle appear to have wide center body dimension or extra "spring of rib." These cattle may be described as "big barreled" and are often referred to as "easy fleshing" or "easy keeping" cattle. The opposite phenotype could be described as tall, narrow, light muscled, and flat ribbed. There are discrepancies about the amount of muscle that is desirable. However, average or slightly above average muscling is likely desirable. Fat stores are important, and the degree of fatness is commonly judged by the amount of subcutaneous fat. It is logical that intramuscular fat is also important, and heavier muscled cattle should be able to store more intramuscular fat.

Hair Shedding
The ability of cows to shed their winter hair coat early in the spring is a distinct advantage, particularly for spring calving cows grazing KY 31 fescue pastures. Research data indicates there is a genetic component to hair shedding, and the heritability is in the moderate range. Consequently, by selecting for early shedding, steady progress is possible. The ability to shed hair early appears to be necessary for cows to cycle and rebreed on a timely basis. Those cows that fail to shed their winter hair early are much more likely to be open at the end of the breeding season. There also appears to be a genetic predisposition or tolerance of the toxin present in KY 31 fescue, and that predisposition is likely related to hair shedding. Dr. Jared Decker at the University of Missouri has a major study on environmental adaptability that could result in discovering the molecular basis for fescue tolerance.

Crossbreeding
Crossbreeding results in Hybrid Vigor, and Hybrid Vigor is "free to get" but economically advantageous in cattle production systems. Traits that are low in heritability such as fertility, adaptability, disease resistance, and milking ability are those most improved by crossbreeding. Hybrid vigor offers the most advantage for stressful conditions and harsh environments. Crossbred animals simply thrive and perform at a higher level when pasture conditions are less than ideal. More ideal animals can be made by crossbreeding since it is possible to take advantage of breed complementarity.

Smaller herds have often had difficulty in designing breeding programs to take advantage of hybrid vigor because of the difficulty in producing replacement females. For smaller herds, the logical approach is to find a reputable source and purchase crossbred heifers or cows. By doing this, a different breed of bull can be used to provide maximum hybrid vigor. However, it is not advisable to use strictly straight breeding because of not being able to get maximum hybrid vigor. Burke Teichert often mentions that "some hybrid vigor is better than none." Just remember that hybrid vigor or heterosis is free and creates value.

Summary
The ideal cow for most grazing scenarios is a crossbred cow of moderate mature size and average or below average milk production for the breeds included. Also, the ideal cow should be one with calm disposition and soundness of udder and feet and legs to allow for a long, problem free productive life. Cows are more likely to be forage efficient if they are wide centered and easy fleshing. It is also desirable if the cow transmits enough growth, efficiency, and carcass superiority to be ideal for the other production segments of the industry and the consumer.